#6

SEQUENCE LISTING

<110> Ulrich, Robert G.

<120> Bacterial Superantigen Vaccines

<130> 003/233/SAP

<140> 10/002,784

<141> 2001-11-26

<150> 08/882,431; 09/144,776

<151> 97-06-25; 98-09-01

<160> 40

<170> Apple Macintosh Microsoft Word 6.0

<210> 1

<211> 830

<212> DNA

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin A periplasmic

<400> 1

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taacgttgac aacaagtcca cttgtaaatg gtagcgagaa 80
aagcgaagaa ataaatgaaa aagatttgcg aaaaaagtct 120
gaattgcagg gaacagcttt aggcaatctt aaacaaatct 160
attattacaa tgaaaaagct aaaactgaaa ataaagagag 200
tcacgatcaa tttcgacagc atactatatt gtttaaaggc 240
ttttttacag atcattcgtg gtataacgat ttattagtac 280
gttttgattc aaaggatatt gttgataaat ataaagggaa 320
aaaagtagac ttgtatggtg cttatgctgg ttatcaatgt 360
gcgggtggta caccaaacaa aacagcttgt atgtatggtg 400
gtgtaacgtt acatgataat aatcgattga ccgaagagaa 440
aaaagtgccg atcaatttat ggctagacgg taaacaaaat 480
acagtacctt tggaaacggt taaaacgaat aagaaaaatg 520
taactgttca ggagttggat cttcaagcaa gacgttattt 560
acaggaaaaa tataatttat ataactctga tgtttttgat 600
gggaaggttc agaggggatt aatcgtgttt catacttcta 640

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cagaaccttc ggttaattac gatttatttg gtgctcaagg    680
acagtattca aatacactat taagaatata tagagataat    720
aaaacgatta actctgaaaa catgcatatt gatatatatt    760
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ttcagattat tatgaaccga taataatcta               830
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<210> 2

<211> 257

<212> PRT

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin A periplasmic

<400> 2

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Met Lys Lys Thr Ala Phe Thr Leu Leu Leu
1               5                  10
Phe Ile Ala Leu Thr Leu Thr Thr Ser Pro
            15                  20
Leu Val Asn Gly Ser Glu Lys Ser Glu Glu
            25                  30
Ile Asn Glu Lys Asp Leu Arg Lys Lys Ser
            35                  40
Glu Leu Gln Gly Thr Ala Leu Gly Asn Leu
            45                  50
Lys Gln Ile Tyr Tyr Tyr Asn Glu Lys Ala
            55                  60
Lys Thr Glu Asn Lys Glu Ser His Asp Gln
            65                  70
Phe Arg Gln His Thr Ile Leu Phe Lys Gly
            75                  80
Phe Phe Thr Asp His Ser Trp Tyr Asn Asp
            85                  90
Leu Leu Val Arg Phe Asp Ser Lys Asp Ile
            95                 100
Val Asp Lys Tyr Lys Gly Lys Lys Val Asp
           105                 110
Leu Tyr Gly Ala Tyr Ala Gly Tyr Gln Cys
           115                 120
Ala Gly Gly Thr Pro Asn Lys Thr Ala Cys
           125                 130
Met Tyr Gly Gly Val Thr Leu His Asp Asn
           135                 140
Asn Arg Leu Thr Glu Glu Lys Lys Val Pro
           145                 150
Ile Asn Leu Trp Leu Asp Gly Lys Gln Asn
           155                 160
Thr Val Pro Leu Glu Thr Val Lys Thr Asn
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                  165                 170
Lys Lys Asn Val Thr Val Gln Glu Leu Asp
                  175                 180
Leu Gln Ala Arg Arg Tyr Leu Gln Glu Lys
                  185                 190
Tyr Asn Leu Tyr Asn Ser Asp Val Phe Asp
                  195                 200
Gly Lys Val Gln Arg Gly Leu Ile Val Phe
                  205                 210
His Thr Ser Thr Glu Pro Ser Val Asn Tyr
                  215                 220
Asp Leu Phe Gly Ala Gln Gly Gln Tyr Ser
                  225                 230
Asn Thr Leu leu Arg Ile Tyr Arg Asp Asn
                  235                 240
Lys Thr Ile Asn Ser Glu Asn Met His Ile
                  245                 250
Asp Ile Tyr Leu Tyr Thr Ser
                  255
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<210> 3

<211> 757

<212> DNA

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin A cytoplasmic

<400> 3

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aaagtctgaa ttgcagggaa cagctttagg caatcttaaa    80
caaatctatt attacaatga aaaagctaaa actgaaaata   120
aagagagtca cgatcaattt cgacagcata ctatattgtt   160
taaaggcttt tttacagatc attcgtggta taacgattta   200
ttagtacgtt ttgattcaaa ggatattgtt gataaatata   240
aagggaaaaa agtagacttg tatggtgctt atgctggtta   280
tcaatgtgcg ggtggtacac caaacaaaac agcttgtatg   320
tatggtggtg taacgttaca tgataataat cgattgaccg   360
aagagaaaaa agtgccgatc aatttatggc tagacggtaa   400
acaaaataca gtacctttgg aaacggttaa aacgaataag   440
aaaaatgtaa ctgttcagga gttggatctt caagcaagac   480
gttatttaca ggaaaaatat aatttatata actctgatgt   520
ttttgatggg aaggttcaga ggggattaat cgtgtttcat   560
acttctacag aaccttcggt taattacgat ttatttggtg   600
ctcaaggaca gtattcaaat acactattaa gaatatatag   640
agataataaa acgattaact ctgaaaacat gcatattgat   680
atatatttat atacaagtta aacatggtag ttttgaccaa   720
cgtaatgttc agattattat gaaccgagaa taatcta      757
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<210> 4

<211> 233

<212> PRT

<213> artificial sequence

<220>

<223> mutant staphylococcal enterotoxin A cytoplasmic

<400> 4

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Met Glu Lys Ser Glu Glu Ile Asn Glu Lys
 5                                  10
Asp Leu Arg Lys Lys Ser Glu Leu Gln Gly
                15                  20
Thr Ala Leu Gly Asn Leu Lys Gln Ile Tyr
                25                  30
Tyr Tyr Asn Glu Lys Ala Lys Thr Glu Asn
                35                  40
Lys Glu Ser His Asp Gln Phe Arg Gln His
                45                  50
Thr Ile Leu Phe Lys Gly Phe Phe Thr Asp
                55                  60
His Ser Trp Tyr Asn Asp Leu Leu Val Arg
                65                  70
Phe Asp Ser Lys Asp Ile Val Asp Lys Tyr
                75                  80
Lys Gly Lys Lys Val Asp Leu Tyr Gly Ala
                85                  90
Tyr Ala Gly Tyr Gln Cys Ala Gly Gly Thr
                95                  100
Pro Asn Lys Thr Ala Cys Met Tyr Gly Gly
                105                 110
Val Thr Leu His Asp Asn Asn Arg Leu Thr
                115                 120
Glu Glu Lys Lys Val Pro Ile Asn Leu Trp
                125                 130
Leu Asp Gly Lys Gln Asn Thr Val Pro Leu
                135                 140
Glu Thr Val Lys Thr Asn Lys Lys Asn Val
                145                 150
Thr Val Gln Glu Leu Asp Leu Gln Ala Arg
                155                 160
Arg Tyr Leu Gln Glu Lys Tyr Asn Leu Tyr
                165                 170
Asn Ser Asp Val Phe Asp Gly Lys Val Gln
                175                 180
Arg Gly Leu Ile Val Phe His Thr Ser Thr
                185                 190
Glu Pro Ser Val Asn Tyr Asp Leu Phe Gly
                195                 200
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Ala Gln Gly Gln Tyr Ser Asn Thr Leu Leu
205 210
Arg Ile Tyr Arg Asp Asn Lys Thr Ile Asn
215 220
Ser Glu Asn Met His Ile Asp Ile Tyr Leu
225 230
Tyr Thr Ser

<210> 5

<211> 1712

<212> DNA

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B

<400> 5

gaactaggta gaaaaataat tatgagaaaa cactatgttg 40
ttaaagatgt tttcgtatat aagtttaggt gatgtatagt 80
tacttaattt taaaagcata acttaattaa tataaataac 120
atgagattat taaatataat taagtttctt ttaatgtttt 160
tttaattgaa tatttaagat tataacatat atttaaagtg 200
tatctagata ctttttggga atgttggata aaggagataa 240
aaaatgtata agagattatt tatttcacat gtaattttga 280
tattcgcact gatattagtt atttctacac ccaacgtttt 320
agcagagagt caaccagatc ctaaaccaga tgagttgcac 360
aaatcgagta aattcactgg tttgatggaa gatatgaaag 400
ttttgtatga tgataatcat gtatcagcaa taaacgttaa 440
atctatagat caatttctat actttgactt aatatattct 480
attaaggaca ctaagttagg ggattatgat aatgttcgag 520
tcgaatttaa aaacaaagat ttagctgata aatacaaaga 560
taaatacgta gatgtgtttg gagctaatta ttattatcaa 600
tgttaatttt ctaaaaaaac gaatgatatt aattcgcatc 640
aaactgacaa acgaaaaact tgtatgtatg gtggtgtaac 680
tgagcataat ggaaaccaat tagataaata tagaagtatt 720
actgttcggg tatttgaaga tggtaaaaat ttattatctt 760
ttgacgtaca aactaataag aaaaaggtga ctgctcaaga 800
attagattac ctaactcgtc actatttggt gaaaaataaa 840
aaactctatg aatttaacaa ctcgccttat gaaacgggat 880
atattaaatt tatagaaaat gagaatagct tttggtatga 920
catgatgcct gcaccaggag ataaatttgc ccaatctaaa 960
tatttaatga tgtacaatga caataaaatg gttgattcta 1000
aagatgtgaa gattgaagtt tatcttacga caaagaaaaa 1040
gtgaaattat attttagaaa agtaaatatg aagagttagt 1080
aattaaggca ggcacttata gagtacctgc cttttctaat 1120
attatttagt tatagttatt tttgttatat ctctctgatt 1160
tagcattaac cccttgttgc cattatagtt ttcaccaact 1200
ttagctgaaa ttgggggatc atttttatct ttactatgga 1240

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tagttactgt gtcgccgttt ttaacgattt gtttctcttt   1280
taatttgtca gttaattttt tccatgcatc atttgcgtca   1320
aacctatttc catttggatt tattcttgac aaatcaattc   1360
ttttaacact atcggtatta atcggcttgt tattaaaatt   1400
actaagttca tctaaatcag ctgtacccgt aatactactt   1440
tcgccaccat tatttaaatt gtacgtaaca ccaactgtct   1480
catttgctgt tttatcgata atatttgctt ctttcaaagc   1520
atctcttaca tttttccata agtctctatc tgttatttca   1560
gaagcctttg caacgttatt aataccatta taatttgaat   1600
aagaatgaaa acctgaacct actgttgtta aaactaaagc   1640
acttgctatc aatgttcttg ttaatagttt tttattcatt   1680
ttatttttctc ctataactta tttgcaatcg at          1712
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<210> 6

<211> 266

<212> PRT

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B

<400> 6

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Ile Leu Ile Phe Ala Leu Ile Leu Val Ile
                15                  20
Ser Thr Pro Asn Val Leu Ala Glu Ser Gln
            25                      30
Pro Asp Pro Lys Pro Asp Glu Leu His Lys
        35                          40
Ser Ser Lys Phe Thr Gly Leu Met Glu Asp
    45                              50
Met Lys Val Leu Tyr Asp Asp Asn His Val
55                                  60
Ser Ala Ile Asn Val Lys Ser Ile Asp Gln
65                                  70
Phe Leu Tyr Phe Asp Leu Ile Tyr Ser Ile
                75                  80
Lys Asp Thr Lys Leu Gly Asp Tyr Asp Asn
            85                      90
Val Arg Val Glu Phe Lys Asn Lys Asp Leu
        95                          100
Ala Asp Lys Tyr Lys Asp Lys Tyr Val Asp
    105                             110
Val Phe Gly Ala Asn Tyr Tyr Tyr Gln Cys
115                                 120
Tyr Phe Ser Lys Lys Thr Asn Asp Ile Asn
                125                 130
Ser His Gln Thr Asp Lys Arg Lys Thr Cys
```

```
                135                 140
Met Tyr Gly Gly Val Thr Glu His Asn Gly
                145                 150
Asn Gln Leu Asp Lys Tyr Arg Ser Ile Thr
                155                 160
Val Arg Val Phe Glu Asp Gly Lys Asn Leu
                165                 170
Leu Ser Phe Asp Val Gln Thr Asn Lys Lys
                175                 180
Lys Val Thr Ala Gln Glu Leu Asp Tyr Leu
                185                 190
Thr Arg His Tyr Leu Val Lys Asn Lys Lys
                195                 200
Leu Tyr Glu Phe Asn Asn Ser Pro Tyr Glu
                205                 210
Thr Gly Tyr Ile Lys Phe Ile Glu Asn Glu
                215                 220
Asn Ser Phe Trp Tyr Asp Met Met Pro Ala
                225                 230
Pro Gly Asp Lys Phe Ala Gln Ser Lys Tyr
                235                 240
Leu Met Met Tyr Asn Asp Asn Lys Met Val
                245                 250
Asp Ser Lys Asp Val Lys Ile Glu Val Tyr
                255                 260
Leu Thr Thr Lys Lys Lys
                265
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<210> 7

<211> 1712

<212> DNA

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B periplasmic

<400> 7

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tacttaattt taaaagcata acttaattaa tataaataac    120
atgagattat taaatataat taagtttctt ttaatgtttt    160
tttaattgaa tatttaagat tataacatat atttaaagtg    200
tatctagata ctttttggga atgttggata aaggagataa    240
aaaatgtata agagattatt tatttcacat gtaattttga    280
tattcgcact gatattagtt atttctacac ccaacgtttt    320
agcagagagt caaccagatc ctaaaccaga tgagttgcac    360
aaatcgagta aattcactgg tttgatggaa aatatgaaag    400
ttttgtatga tgataatcat gtatcagcaa taaacgttaa    440
atctatagat caatttcgat actttgactt aatatattct    480
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attaaggaca ctaagttagg gaattatgat aatgttcgag    520
tcgaatttaa aaacaaagat ttagctgata aatacaaaga    560
taaatacgta gatgtgtttg gagctaatgc ttattatcaa    600
tgtgcttttt ctaaaaaaac gaatgatatt aattcgcatc    640
aaactgacaa acgaaaaact tgtatgtatg gtggtgtaac    680
tgagcataat ggaaaccaat tagataaata tagaagtatt    720
actgttcggg tatttgaaga tggtaaaaat ttattatctt    760
ttgacgtaca aactaataag aaaaaggtga ctgctcaaga    800
attagattac ctaactcgtc actatttggt gaaaaataaa    840
aaactctatg aatttaacaa ctcgccttat gaaacgggat    880
atattaaatt tatagaaaat gagaatagct tttggtatga    920
catgatgcct gcaccaggag ataaatttga ccaatctaaa    960
tatttaatga tgtacaatga caataaaatg gttgattcta   1000
aagatgtgaa gattgaagtt tatcttacga caaagaaaaa   1040
gtgaaattat attttagaaa agtaaatatg aagagttagt   1080
aattaaggca ggcacttata gagtacctgc cttttctaat   1120
attatttagt tatagttatt tttgttatat ctctctgatt   1160
tagcattaac cccttgttgc cattatagtt ttcaccaact   1200
ttagctgaaa ttgggggatc atttttatct ttactatgga   1240
tagttactgt gtcgccgttt ttaacgattt gtttctcttt   1280
taatttgtca gttaattttt tccatgcatc atttgcgtca   1320
aacctatttc catttggatt tattcttgac aaatcaattc   1360
ttttaacact atcggtatta atcggcttgt tattaaaatt   1400
actaagttca tctaaatcag ctgtacccgt aatactactt   1440
tcgccaccat tatttaaatt gtacgtaaca ccaactgtct   1480
catttgctgt tttatcgata atatttgctt ctttcaaagc   1520
atctcttaca tttttccata agtctctatc tgttatttca   1560
gaagcctttg caacgttatt aataccatta taatttgaat   1600
aagaatgaaa acctgaacct actgttgtta aaactaaagc   1640
acttgctatc aatgttcttg ttaatagttt tttattcatt   1680
ttatttttctc ctataactta tttgcaatcg at          1712
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<210> 8

<211> 266

<212> PRT

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B periplasmic

<400> 8

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Met Tyr Lys Arg Leu Phe Ile Ser His Val
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Ile Leu Ile Phe Ala Leu Ile Leu Val Ile
 15                                  20
Ser Thr Pro Asn Val Leu Ala Glu Ser Gln
 25                                  30
Pro Asp Pro Lys Pro Asp Glu Leu His Lys
 35                                  40
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Ser Ser Lys Phe Thr Gly Leu Met Glu Asn
45 50
Met Lys Val Leu Tyr Asp Asp Asn His Val
55 60
Ser Ala Ile Asn Val Lys Ser Ile Asp Gln
65 70
Phe Arg Tyr Phe Asp Leu Ile Tyr Ser Ile
75 80
Lys Asp Thr Lys Leu Gly Asn Tyr Asp Asn
85 90
Val Arg Val Glu Phe Lys Asn Lys Asp Leu
95 100
Ala Asp Lys Tyr Lys Asp Lys Tyr Val Asp
105 110
Val Phe Gly Ala Asn Ala Tyr Tyr Gln Cys
115 120
Ala Phe Ser Lys Lys Thr Asn Asp Ile Asn
125 130
Ser His Gln Thr Asp Lys Arg Lys Thr Cys
135 140
Met Tyr Gly Gly Val Thr Glu His Asn Gly
145 150
Asn Gln Leu Asp Lys Tyr Arg Ser Ile Thr
155 160
Val Arg Val Phe Glu Asp Gly Lys Asn Leu
165 170
Leu Ser Phe Asp Val Gln Tyr Asn Lys Lys
175 180
Lys Val Thr Ala Gln Glu Leu Asp Tyr Leu
185 190
Thr Arg His Tyr Leu Val Lys Asn Lys Lys
195 200
Leu Tyr Glu Phe Asn Asn Ser Pro Tyr Glu
205 210
Thr Gly Tyr Ile Lys Phe Ile Glu Asn Glu
215 220
Asn Ser Phe Trp Tyr Asp Met Met Pro Ala
225 230
Pro Gly Asp Lys Phe Asp Gln Ser Lys Tyr
235 240
Leu Met Met Tyr Asn Asp Asn Lys Met Val
245 250
Asp Ser Lys Asp Val Lys Ile Glu Val Tyr
255 260
Leu Thr Thr Lys Lys Lys
265

<210> 9

<211> 1388

<212> DNA

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B cytoplasmic

<400> 9

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gtatgatgat aatcatgtat cagcaataaa cgttaaatct 120
atagatcaat ttcgatactt tgacttaata tattctatta 160
aggacactaa gttagggaat tatgataatg ttcgagtcga 200
atttaaaaac aaagatttag ctgataaata caaagataaa 240
tacgtagatg tgtttggagc taatgcttat tatcaatgtg 280
ctttttctaa aaaaacgaat gatattaatt cgcatcaaac 320
tgacaaacga aaaacttgta tgtatggtgg tgtaactgag 360
cataatggaa accaattaga taaatataga agtattactg 400
ttcgggtatt tgaagatggt aaaaatttat tatcttttga 440
cgtacaaact aataagaaaa aggtgactgc tcaagaatta 480
gattacctaa ctcgtcacta tttggtgaaa aataaaaaac 520
tctatgaatt taacaactcg ccttatgaaa cgggatatat 560
taaatttata gaaaatgaga atagcttttg gtatgacatg 600
atgcctgcac caggagataa atttgaccaa tctaaatatt 640
taatgatgta caatgacaat aaaatggttg attctaaaga 680
tgtgaagatt gaagtttatc ttacgacaaa gaaaaagtga 720
aattatattt tagaaaagta aatatgaaga gttagtaatt 760
aaggcaggca cttatagagt acctgccttt tctaatatta 800
tttagttata gttatttttg ttatatctct ctgatttagc 840
attaacccct tgttgccatt atagttttca ccaactttag 880
ctgaaattgg gggatcattt ttatctttac tatggatagt 920
tactgtgtcg ccgtttttaa cgatttgttt ctcttttaat 960
ttgtcagtta attttttcca tgcatcattt gcgtcaaacc 1000
tatttccatt tggatttatt cttgacaaat caattctttt 1040
aacactatcg gtattaatcg gcttgttatt aaaattacta 1080
agttcatcta aatcagctgt acccgtaata ctactttcgc 1120
caccattatt taaattgtac gtaacaccaa ctgtctcatt 1160
tgctgtttta tcgataatat ttgcttcttt caaagcatct 1200
cttacatttt tccataagtc tctatctgtt atttcagaag 1240
cctttgcaac gttattaata ccattataat ttgaagaaga 1280
atgaaaacct gaacctactg ttgttaaaac taaagcactt 1320
gctatcaatg ttcttgttaa tagtttttta ttcattttat 1360
tttctcctat aacttatttg caatcgat 1388

<210> 10

<211> 239

<212> PRT

<213> Artificial sequence

<220>

<223> mutant staphylococcal enterotoxin B cytoplasmic

<400> 10

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Met Ser Gln Pro Asp Pro Lys Pro Asp Glu
 5                                  10
Leu His Lys Ser Ser Lys Phe Thr Gly Leu
                15                  20
Met Glu Asn Met Lys Val Leu Tyr Asp Asp
            25                      30
Asn His Val Ser Ala Ile Asn Val Lys Ser
        35                          40
Ile Asp Gln Phe Arg Tyr Phe Asp Leu Ile
    45                              50
Tyr Ser Ile Lys Asp Thr Lys Leu Gly Asn
55                                  60
Tyr Asp Asn Val Arg Val Glu Phe Lys Asn
65                                  70
Lys Asp Leu Ala Asp Lys Tyr Lys Asp Lys
                75                  80
Tyr Val Asp Val Phe Gly Ala Asn Ala Tyr
            85                      90
Tyr Gln Cys Ala Phe Ser Lys Lys Thr Asn
        95                          100
Asp Ile Asn Ser His Gln Thr Asp Lys Arg
    105                             110
Lys Thr Cys Met Tyr Gly Gly Val Thr Glu
115                                 120
His Asn Gly Asn Gln Leu Asp Lys Tyr Arg
                125                 130
Ser Ile Thr Val Arg Val Phe Glu Asp Gly
            135                     140
Lys Asn Leu Leu Ser Phe Asp Val Gln Thr
        145                         150
Asn Lys Lys Lys Val Thr Ala Gln Glu Leu
    155                             160
Asp Tyr Leu Thr Arg His Tyr Leu Val Lys
165                                 170
Asn Lys Lys Leu Tyr Glu Phe Asn Asn Ser
                175                 180
Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile
            185                     190
Glu Asn Glu Asn Ser Phe Trp Tyr Asp Met
        195                         200
Met Pro Ala Pro Gly Asp Lys Phe Asp Gln
    205                             210
Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn
215                                 220
Lys Met Val Asp Ser Lys Asp Val Lys Ile
                225                 230
Glu Val Tyr Leu Thr Thr Lys Lys Lys
            235
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<210> 11

<211> 731

<212> DNA

<213> Artificial sequence

<220>

<223> toxin shock syndrome toxin-1 mutant

<400> 11

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agattttacc cctgttccct tatcatctaa tcaaataatc    120
aaaactgcaa aagcatctac aaacgataat ataaaggatt    160
tgctagactg gtatagtagt gggtctgaca cttttacaaa    200
tagtgaagtt ttagataatt ccagaggatc tatgcgtata    240
aaaaacacag atggcagcat cagcttgata atttttccga    280
gtccttatta tagccctgct tttacaaaag gggaaaaagt    320
tgacttaaac acaaaaagaa ctaaaaaaag ccaacatact    360
agcgaaggaa cttatatcca tttccaaata agtggcgtta    400
caaatactga aaaattacct actccaatag aactaccttt    440
aaaagttaag gttcatggta aagatagccc cttaaagtat    480
gggccaaagt tcgataaaaa acaattagct atatcaactt    520
tagactttga aattcgtcat cagctaactc aaatacatgg    560
attatatcgt tcaagcgata aaacgggtgg ttattggaaa    600
ataacaatga atgacggatc cacatatcaa agtgatttat    640
ctaaaaagtt tgaatacaat actgaaaaac cacctataaa    680
tattgatgaa ataaaaacta tagaagcaga aattaattaa    720
tttaccactt t                                  731
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<210> 12

<211> 234

<212> PRT

<213> Artificial sequence

<220>

<223> toxin shock syndrom toxin-1 mutant

<400> 12

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Met Asn Lys Lys Leu Leu Met Asn Phe Phe
                5                  10
Ile Val Ser Pro Leu Leu Leu Ala Thr Thr
               15                  20
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Ala Thr Asp Phe Thr Pro Val Pro Leu Ser
25 30
Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala
35 40
Ser Thr Asn Asp Asn Ile Lys Asp Leu Leu
45 50
Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe
55 60
Thr Asn Ser Glu Val Leu Asp Asn Ser Arg
65 70
Gly Ser Met Arg Ile Lys Asn Thr Asp Gly
75 80
Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro
85 90
Tyr Tyr Ser Pro Ala Phe Thr Lys Gly Glu
95 100
Lys Val Asp Leu Asn Thr Lys Arg Thr Lys
105 110
Lys Ser Gln His Thr Ser Glu Gly Thr Tyr
115 120
Ile His Phe Gln Ile Ser Gly Val Thr Asn
125 130
Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu
135 140
Pro Leu Lys Val Lys Val His Gly Lys Asp
145 150
Ser Pro Leu Lys Tyr Gly Pro Lys Phe Asp
155 160
Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp
165 170
Phe Glu Ile Arg His Gln Leu Thr Gln Ile
175 180
His Gly Leu Tyr Arg Ser Ser Asp Lys Thr
185 190
Gly Gly Tyr Trp Lys Ile Thr Met Asn Asp
195 200
Gly Ser Thr Tyr Gln Ser Asp Leu Ser Lys
205 210
Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro
215 220
Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu
225 230
Ala Glu Ile Asn

<210> 13

<211> 1095

<212> DNA

<213> Artificial sequence

<220>

<223> staphylococcal enterotoxin C-1 mutant

<400> 13

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ttgaatattt aagattataa gatatattta aagtgtatct      80
agatactttt tgggaatgtt ggatgaagga gataaaaatg     120
aataagagtc gatttatttc atgcgtaatt ttgatattcg     160
cacttatact agttcttttt acacccaacg tattagcaga     200
gagccaacca gaccctacgc cagatgagtt gcacaaagcg     240
agtaaattca ctggtttgat ggaaaatatg aaagttttat     280
atgatgatca ttatgtatca gcaactaaag ttaagtctgt     320
agataaattt agggcacatg atttaattta taacattagt     360
gataaaaaac tgaaaaatta tgacaaagtg aaaacagagt     400
tattaaatga aggtttagca aagaagtaca aagatgaagt     440
agttgatgtg tatggatcaa attactatgt aaactgctat     480
ttttcatcca aagataatgt aggtaaagtt acaggtggca     520
aaacttgtat gtatggagga ataacaaaac atgaaggaaa     560
ccactttgat aatgggaact tacaaaatgt acttataaga     600
gtttatgaaa ataaaagaaa cacaatttct tttgaagtgc     640
aaactgataa gaaaagtgta acagctcaag aactagacat     680
aaaagctagg aatttttaa ttaataaaaa aaatttgtat     720
gagtttaaca gttcaccata tgaaacagga tatataaaat     760
ttattgaaaa taacggcaat acttttggt atgatatgat     800
gcctgcacca ggcgataagt ttgaccaatc taaatattta     840
atgatgtaca acgacaataa aacggttgat tctaaaagtg     880
tgaagataga agtccacctt acaacaaaga atggataatg     920
ttaatccgat tttgatataa aaagtgaaag tattagatat     960
atttgaaagg taagtacttc ggtgcttgcc tttttaggat    1000
gcatatatat agattaaacc gcacttctat attaatagaa    1040
agtgcggtta tttatacact caatctaaac tataataatt    1080
ggaatcatct tcaaa                              1095
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<210> 14

<211> 266

<212> PRT

<213> Artificial sequence

<220>

<223> staphylococcal enterotoxin C-1 mutant

<400> 14

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Met Asn Lys Ser Arg Phe Ile Ser Cys Val
                  5                  10
Ile Leu Ile Phe Ala Leu Ile Leu Val Leu
                 15                  20
```

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Phe Thr Pro Asn Val Leu Ala Glu Ser Gln
                  25                  30
Pro Asp Pro Thr Pro Asp Glu Leu His Lys
                  35                  40
Ala Ser Lys Phe Thr Gly Leu Met Glu Asn
                  45                  50
Met Lys Val Leu Tyr Asp Asp His Tyr Val
                  55                  60
Ser Ala Thr Lys Val Lys Ser Val Asp Lys
                  65                  70
Phe Arg Ala His Asp Leu Ile Tyr Asn Ile
                  75                  80
Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys
                  85                  90
Val Lys Thr Glu Leu Leu Asn Glu Gly Leu
                  95                 100
Ala Lys Lys Tyr Lys Asp Glu Val Val Asp
                 105                 110
Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys
                 115                 120
Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys
                 125                 130
Val Thr Gly Gly Lys Thr Cys Met Tyr Gly
                 135                 140
Gly Ile Thr Lys His Glu Gly Asn His Phe
                 145                 150
Asp Asn Gly Asn Leu Gln Asn Val Leu Ile
                 155                 160
Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile
                 165                 170
Ser Phe Glu Val Gln Thr Asp Lys Lys Ser
                 175                 180
Val Thr Ala Gln Glu Leu Asp Ile Lys Ala
                 185                 190
Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu
                 195                 200
Tyr Glu Phe Asn Ser Ser Phe Tyr Glu Thr
                 205                 210
Gly Tyr Ile Lys Phe Ile Glu Asn Asn Gly
                 215                 220
Asn Thr Phe Trp Tyr Asp Met Met Pro Ala
                 225                 230
Pro Gly Asp Lys Phe Asp Gln Ser Lys Tyr
                 235                 240
Leu Met Met Tyr Asn Asp Asn Lys Thr Val
                 245                 250
Asp Ser Lys Ser Val Lys Ile Glu Val His
                 255                 260
Leu Thr Thr Lys Asn Gly
                 265
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<210> 15

<211> 1837

<212> DNA

<213> Artificial sequence

<220>

<223> streptococcal pyrogenic exotoxin-A mutant

<400> 15

tcatgtttga cagcttatca tcgataagct tacttttcga 40
atcaggtcta tccttgaaac aggtgcaaca tagattaggg 80
catggagatt taccagacaa ctatgaacgt atatactcac 120
atcacgcaat cggcaattga tgacattgga actaaattca 160
atcaatttgt tactaacaag caactagatt gacaactaat 200
tctcaacaaa cgttaattta acaacattca agtaactccc 240
accagctcca tcaatgctta ccgtaagtaa tcataactta 280
ctaaaacctt gttacatcaa ggtttttttct ttttgtcttg 320
ttcatgagtt accataactt tctatattat tgacaactaa 360
attgacaact cttcaattat ttttctgtct actcaaagtt 400
ttcttcattt gatatagtct aattccacca tcacttcttc 440
cactcctctct accgtcacaa cttcatcatc tctcactttt 480
tcgtgtggta acacataatc aaatatcttt ccgtttttac 520
gcactatcgc tactgtgtca cctaaaatat acccccttatc 560
aatcgcttct ttaaactcat ctatatataa catatttcat 600
cctcctacct atctattcgt aaaaagataa aaataactat 640
tgtttttttt gttattttat aataaaatta ttaatataag 680
ttaatgtttt ttaaaaatat acaattttat tctatttata 720
gttagctatt ttttcattgt tagtaatatt ggtgaattgt 760
aataaccttt ttaaatctag aggagaaccc agatataaaa 800
tggaggaata ttaatggaaa acaataaaaa agtattgaag 840
aaaatggtat tttttgtttt agtgacattt cttggactaa 880
caatctcgca agaggtattt gctcaacaag accccgatcc 920
aagccaactt cacagatcta gtttagttaa aaaccttcaa 960
aatatatatt ttctttatga gggtgaccct gttactcacg 1000
agaatgtgaa atctgttgat caacttagat ctcacgattt 1040
aatatataat gtttcagggc caaattatga taaattaaaa 1080
actgaactta agaaccaaga gatggcaact ttatttaagg 1120
ataaaaacgt tgatatttat ggtgtagaat attaccatct 1160
ctgttattta tgtgaaaatg cagaaaggag tgcatgtatc 1200
tacggagggg taacaaatca tgaaggaaat catttagaaa 1240
ttcctaaaaa gatagtcgtt aaagtatcaa tcgatggtat 1280
ccaaagccta tcatttgata ttgaaacaaa taaaaaaatg 1320
gtaactgctc aagaattaga ctataaagtt agaaaatatc 1360
ttacagataa taagcaacta tatactaatg gaccttctaa 1400
atatgaaact ggatatataa agttcatacc taagaataaa 1440
gaaagttttt ggtttgattt tttccctgaa ccagaattta 1480
ctcaatctaa atatcttatg atatataaag ataatgaaac 1520
gcttgactca aacacaagcc aaattgaagt ctacctaaca 1560
accaagtaac tttttgcttt tggcaacctt acctactgct 1600
ggatttagaa attttattgc aattctttta ttaatgtaaa 1640
aaccgctcat ttgatgagcg gttttgtctt atctaaagga 1680

gctttacctc ctaatgctgc aaaatttaa atgttggatt 1720
tttgtatttg tctattgtat ttgatgggta atcccatttt 1760
tcgacagaca tcgtcgtgcc acctctaaca ccaaaatcat 1800
agacaggagc ttgtagctta gcaactattt tatcgtc 1837

<210> 16

<211> 251

<212> PRT

<213> Artificial sequence

<220>

<223> streptococcal pyrogenic exotoxin-A mutant

<400> 16

Met Glu Asn Asn Lys Lys Val Leu Lys Lys
5 10
Met Val Phe Phe Val Leu Val Thr Phe Leu
15 20
Gly Leu Thr Ile Ser Gln Glu Val Phe Ala
25 30
Gln Gln Asp Pro Asp Pro Ser Gln Leu His
35 40
Arg Ser Ser Leu Val Lys Asn Leu Gln Asn
45 50
Ile Tyr Phe Leu Tyr Glu Gly Asp Pro Val
55 60
Thr His Glu Asn Val Lys Ser Val Asp Gln
65 70
Leu Arg Ser His Asp Leu Ile Tyr Asn Val
75 80
Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr
85 90
Glu Leu Lys Asn Gln Glu Met Ala Thr Leu
95 100
Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly
105 110
Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys
115 120
Glu Asn Ala Glu Arg Ser Ala Cys Ile Tyr
125 130
Gly Gly Val Thr Asn His Glu Gly Asn His
135 140
Leu Glu Ile Pro Lys Lys Ile Val Val Lys
145 150
Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
155 160
Phe Asp Ile Glu Thr Asn Lys Lys Met Val
165 170
Thr Ala Gln Glu Leu Asp Tyr Lys Val Arg

175 180
Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr
185 190
Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly
195 200
Tyr Ile Lys Phe Ile Pro Lys Asn Lys Glu
205 210
Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro
215 220
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile
225 230
Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn
235 240
Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr
245 250
Lys

<210> 17

<211> 28

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 18

ctcgcaagag gtacatatgc aacaagac 28

<210> 18

<211> 24

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 18

gcagtaggta agcttgccaa aagc 24

<210> 19

<211> 34

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 19

gatatacata tgcaacaaga ccccgatcca agcc 34

<210> 20

<211> 37

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 20

gagatttaac aactggttgc ttggttgtta ggtagac 37

<210> 21

<211> 37

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 21

gtctacctaa caaccaagca accagttgtt aaatctc 37

<210> 22

<211> 27

<212> DNA

<213> Artificial sequence

<220>

<223> primer

<400> 22

gaattcggat ccgctagcct acaacag 27

<210> 23

<211> 1419

<212> DNA

<213> Artificial sequence

<220>

<223> mutant SpeA/mutant SpeB fusion

<400> 23

atgcaacaag accccgatcc aagccaactt cacagatcta 40
gtttagttaa aaaccttcaa aatatatatt ttctttatga 80
gggtgaccct gttactcacg agaatgtgaa atctgttgat 120
caacttcgat ctcacgattt aatatataat gtttcagggc 160
caaattatga taaattaaaa actgaactta agaaccaaga 200
gatggcaact ttatttaagg ataaaaacat tgatatttat 240
ggtgtagaat attaccatct ctgttattta tgtgaaaatg 280
cagaaaggag tgcatgtatc tacggagggg taacaaatcg 320
tgaagggaat catttagaaa ttcctaaaaa gatagtcgtc 360
aaagtatcaa tcgatggtat acaaagccta tcatttgata 400
ttgaaacaaa taaaaaaatg gtaactgctc aagaattaga 440
ctataaagtt agaaaatatc ttacagataa taagcaacta 480
tatactaatg gaccttctaa atatgaaact ggatatataa 520
agttcatacc taagaataaa gaaagttttt ggtttgattt 560
tttccctgaa ccagaattta ctcaatctaa atatcttatg 600
atatataaag ataatgaaac gcttgactca aacacaagcc 640
aaattgaagt ctacctaaca accaagcaac cagttgttaa 680
atctctcctt gattcaaaag gcattcatta caatcaaggt 720
aacccttaca acctattgac acctgttatt gaaaaagtaa 760
aaccaggtga acaatctttt gtaggtcaac atgcagctac 800
aggatgtgtt gctactgcaa ctgctcaaat tatgaaatat 840
cataattacc ctaacaaagg gttgaaagac tacacttaca 880
cactaagctc aaataaccca tatttcaacc atcctaagaa 920
cttgtttgca gctatctcta ctagacaata caactggaac 960
aacatcctac ctacttatag cggaagagaa tctaacgttc 1000
aaaaaatggc gatttcagaa ttgatggctg atgttggtat 1040
ttcagtagac atggattatg gtccatctag tggttctgca 1080
ggtagctctc gtgttcaaag agccttgaaa gaaaactttg 1120
gctacaacca atctgttcac caaatcaacc gtagcgactt 1160
tagcaaacaa gattgggaag cacaaattga caaagaatta 1200
tctcaaaacc aaccagtata ctaccaaggt gtcggtaaag 1240

taggcggaca tgcctttgtt atcgatggtg ctgacggacg 1280
taacttctac catgttaact ggggttgggg tggagtctct 1320
gacggcttct tccgtcttga cgcactaaac ccttcagctc 1360
ttggtactgg tggcggcgca ggcggcttca acggttacca 1400
aagtgctgtt gtaggctag 1419

<210> 24

<211> 398

<212> PRT

<213> Artificial sequence

<220>

<223> mutant streptococcal pyrogenic exotoxin B prosegement

<400> 24

Met Asn Lys Lys Lys Leu Gly Ile Arg Leu
5 10
Leu Ser Leu Leu Ala Leu Gly Gly Phe Val
15 20
Leu Ala Asn Pro Val Phe Ala Asp Gln Asn
25 30
Phe Ala Arg Asn Glu Lys Glu Ala Lys Asp
35 40
Ser Ala Ile Thr Phe Ile Gln Lys Ser Ala
45 50
Ala Ile Lys Ala Gly Ala Arg Ser Ala Glu
55 60
Asp Ile Lys Leu Asp Lys Val Asn Leu Gly
65 70
Gly Glu Leu Ser Gly Ser Asn Met Tyr Gly
75 80
Tyr Asn Ile Ser Thr Gly Gly Phe Val Ile
85 90
Val Ser Gly Asp Lys Arg Ser Pro Glu Ile
95 100
Leu Gly Tyr Ser Thr Ser Gly Ser Phe Asp
105 110
Ala Asn Gly Lys Glu Asn Ile Ala Ser Phe
115 120
Met Glu Ser Tyr Val Glu Gln Ile Lys Glu
125 130
Asn Lys Lys Leu Asp Thr Thr Tyr Ala Gly
135 140
Thr Ala Glu Ile Lys Gln Pro Val Val Lys
145 150
Ser Leu Leu Asp Ser Lys Gly Ile His Tyr
155 160
Asn Gln Gly Asn Pro Tyr Asn Leu Leu Thr

```
                  165                 170
Pro Val Ile Glu Lys Val Lys Pro Gly Glu
                  175                 180
Gln Ser Phe Val Gly Gln His Ala Ala Thr
                  185                 190
Gly Cys Val Ala Thr Ala Thr Ala Gln Ile
                  195                 200
Met Lys Tyr His Asn Tyr Pro Asn Lys Gly
                  205                 210
Leu Lys Asp Tyr Thr Tyr Thr Leu Ser Ser
                  215                 220
Asn Asn Pro Tyr Phe Asn His Pro Lys Asn
                  225                 230
Leu Phe Ala Ala Ile Ser Thr Arg Gln Tyr
                  235                 240
Asn Trp Asn Asn Ile Leu Pro Thr Tyr Ser
                  245                 250
Gly Arg Glu Ser Asn Val Gln Lys Met Ala
                  255                 260
Ile Ser Glu Leu Met Ala Asp Val Gly Ile
                  265                 270
Ser Val Asp Met Asp Tyr Gly Pro Ser Ser
                  275                 280
Gly Ser Ala Gly Ser Ser Arg Val Gln Arg
                  285                 290
Ala Leu Lys Glu Asn Phe Gly Tyr Asn Gln
                  295                 300
Ser Val His Gln Ile Asn Arg Gly Asp Phe
                  305                 310
Ser Lys Gln Asp Trp Glu Ala Gln Ile Asp
                  315                 320
Lys Glu Leu Ser Gln Asn Gln Pro Val Tyr
                  325                 330
Tyr Gln Gly Val Gly Lys Val Gly Gly His
                  335                 340
Ala Phe Val Ile Asp Gly Ala Asp Gly Arg
                  345                 350
Asn Phe Tyr His Val Asn Trp Gly Trp Gly
                  355                 360
Gly Val Ser Asp Gly Phe Phe Arg Leu Asp
                  365                 370
Ala Leu Asn Pro Ser Ala Leu Gly Thr Gly
                  375                 380
Gly Gly Ala Gly Gly Phe Asn Gly Tyr Gln
                  385                 390
Ser Ala Val Val Gly Ile Lys Pro
                  395
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<210> 25

<211> 248

<212> PRT

<213> Artificial sequence

<220>

<223> mutant streptococcal pyrogenic exotoxin-B

<400> 25

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Gln Pro Val Val Lys Ser Leu Leu Asp Ser
 5                                  10
Lys Gly Ile His Tyr Asn Gln Gly Asn Pro
                15                  20
Tyr Asn Leu Leu Thr Pro Val Ile Glu Lys
            25                      30
Val Lys Pro Gly Glu Gln Ser Phe Val Gly
        35                          40
Gln His Ala Ala Thr Gly Cys Val Ala Thr
    45                              50
Ala Thr Ala Gln Ile Met Lys Tyr His Asn
55                                  60
Tyr Pro Asn Lys Gly Leu Lys Asp Tyr Thr
65                                  70
Tyr Thr Leu Ser Ser Asn Asn Pro Tyr Phe
            75                      80
Asn His Pro Lys Asn Leu Phe Ala Ala Ile
        85                          90
Ser Thr Arg Gln Tyr Asn Trp Asn Asn Ile
    95                              100
Leu Pro Thr Tyr Ser Gly Arg Glu Ser Asn
105                                 110
Val Gln Lys Met Ala Ile Ser Glu Leu Met
            115                     120
Ala Asp Val Gly Ile Ser Val Asp Met Asp
        125                         130
Tyr Gly Pro Ser Ser Gly Ser Ala Gly Ser
    135                             140
Ser Arg Val Gln Arg Ala Leu Lys Glu Asn
145                                 150
Phe Gly Tyr Asn Gln Ser Val His Gln Ile
            155                     160
Asn Arg Ser Asp Phe Ser Gln Asp Trp Glu
        165                         170
Ala Gln Ile Asp Lys Glu Leu Ser Gln Asn
    175                             180
Gln Pro Val Tyr Tyr Gln Gly Gly Lys Val
185                                 190
Gly Gly His Ala Phe Val Ile Asp Gly Ala
            195                     200
Asp Gly Arg Asn Phe Tyr His Val Asn Trp
        205                         210
Gly Trp Gly Gly Val Ser Asp Gly Phe Phe
    215                             220
Arg Leu Asp Ala Leu Asn Pro Ser Ala Leu
225                                 230
Gly Thr Gly Gly Gly Ala Gly Gly Phe Asn
```

235 240
Gly Tyr Gln Ser Ala Val Val Gly
245

<210> 26

<211> 220

<212> PRT

<213> Artificial sequence

<220>

<223> mutant streptococcal pyrogenic exotoxin-A

<400> 26

Met Gln Gln Asp Pro Asp Pro Ser Gln Leu
5 10
His Arg Ser Ser Leu Val Lys Asn Leu Gln
15 20
Asn Ile Tyr Phe Leu Tyr Glu Gly Asp Pro
25 30
Val Thr His Glu Asn Val Lys Ser Val Asp
35 40
Gln Leu Arg Ser His Asp Leu Ile Tyr Asn
45 50
Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys
55 60
Thr Glu Leu Lys Asn Gln Glu Met Ala Thr
65 70
Leu Phe Lys Asp Lys Asn Ile Asp Ile Tyr
75 80
Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu
85 90
Cys Glu Asn Ala Glu Arg Ser Ala Cys Ile
95 100
Gly Gly Val Thr Asn Arg Glu Gly Asn His
105 100
Leu Glu Ile Pro Lys Lys Ile Val Val Lys
115 120
Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
125 130
Phe Asp Ile Glu Thr Asn Lys Lys Met Val
135 140
Thr Ala Gln Glu Leu Asp Tyr Lys Val Arg
145 150
Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr
155 160
Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly
165 170
Tyr Ile Lys Phe Ile Pro Lys Asn Lys Glu

```
                  175                 180
Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro
                  185                 190
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile
                  195                 200
Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn
                  205                 210
Thr Gln Ile Glu Val Tyr Leu Thr Thr Lys
                  215                 220
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<210> 27

<211> 468

<212> PRT

<213> Artificial sequence

<220>

<223> mutant SpeA-mutant SpeB fusion

<400> 27

```
Met Gln Gln Asp Pro Asp Pro Ser Gln Leu
                    5                  10
His Arg Ser Ser Leu Val Lys Asn Leu Gln
                   15                  20
Asn Ile Tyr Phe Leu Tyr Glu Gly Asp Pro
                   25                  30
Val Thr His Glu Asn Val Lys Ser Val Asp
                   35                  40
Gln Leu Arg Ser His Asp Leu Ile Tyr Asn
                   45                  50
Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys
                   55                  60
Thr Glu Leu Lys Asn Gln Glu Met Ala Thr
                   65                  70
Leu Phe Lys Asp Lys Asn Ile Asp Ile Tyr
                   75                  80
Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu
                   85                  90
Cys Glu Asn Ala Glu Arg Ser Ala Cys Ile
                   95                 100
Gly Gly Val Thr Asn Arg Glu Gly Asn His
                  105                 110
Leu Glu Ile Pro Lys Lys Ile Val Val Lys
                  115                 120
Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
                  125                 130
Phe Asp Ile Glu Thr Asn Lys Lys Met Val
                  135                 140
Thr Ala Gln Glu Leu Asp Tyr Lys Val Arg
                  145                 150
```

```
Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr
                155                 160
Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly
                165                 170
Tyr Ile Lys Phe Ile Pro Lys Asn Lys Glu
                175                 180
Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro
                185                 190
Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile
                195                 200
Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn
                205                 210
Thr Gln Ile Glu Val Tyr Leu Thr Thr Lys
                215                 220
Gln Pro Val Val Lys Ser Leu Leu Asp Ser
                225                 230
Lys Gly Ile His Tyr Asn Gln Gly Asn Pro
                235                 240
Tyr Asn Leu Leu Thr Pro Val Ile Glu Lys
                245                 250
Val Lys Pro Gly Glu Gln Ser Phe Val Gly
                255                 260
Gln His Ala Ala Thr Gly Cys Val Ala Thr
                265                 270
Ala Thr Ala Gln Ile Met Lys Tyr His Asn
                275                 280
Tyr Pro Asn Lys Gly Leu Lys Asp Tyr Thr
                285                 290
Tyr Thr Leu Ser Ser Asn Asn Pro Tyr Phe
                295                 300
Asn His Pro Lys Asn Leu Phe Ala Ala Ile
                305                 310
Ser Thr Arg Gln Tyr Asn Trp Asn Asn Ile
                315                 320
Leu Pro Thr Tyr Ser Gly Arg Glu Ser Asn
                325                 330
Val Gln Lys Met Ala Ile Ser Glu Leu Met
                335                 340
Ala Asp Val Gly Ile Ser Val Asp Met Asp
                345                 350
Tyr Gly Pro Ser Ser Gly Ser Ala Gly Ser
                355                 360
Ser Arg Val Gln Arg Ala Leu Lys Glu Asn
                365                 370
Phe Gly Tyr Asn Gln Ser Val His Gln Ile
                375                 380
Asn Arg Ser Asp Phe Ser Gln Asp Trp Glu
                385                 390
Ala Gln Ile Asp Lys Glu Leu Ser Gln Asn
                395                 400
Gln Pro Val Tyr Tyr Gln Gly Gly Lys Val
                405                 410
Gly Gly His Ala Phe Val Ile Asp Gly Ala
                415                 420
```

Asp Gly Arg Asn Phe Tyr His Val Asn Trp
425 430
Gly Trp Gly Gly Val Ser Asp Gly Phe Phe
435 440
Arg Leu Asp Ala Leu Asn Pro Ser Ala Leu
445 450
Gly Thr Gly Gly Gly Ala Gly Gly Phe Asn
455 460
Gly Tyr Gln Ser Ala Val Val Gly
465

<210> 28

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223>

<400> 28

gatatacata tgcaacaaga ccccgatcca agcc 34

<210> 29

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 29

catgtgtata tctccttcct tggttgttag gtagac 36

<210> 30

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 30

gtctacctaa caaccaagga aggagatata cacatg 36

<210> 31

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 31

gaattcggat ccgctagcct acaacag 27

<210> 32

<211> 82

<212> PRT

<213> staphylococcal enterotoxin A

<223> partial sequence as shown in Figure 3

<400> 32

Ser His Asp Gln Phe Leu Gln His Thr Ile
5 10
Leu Phe Lys Gly Phe Phe Thr Asp His Ser
15 20
Trp Tyr Asn Asp Leu Leu Val Asp Phe Asp
25 30
Ser Lys Asp Ile Val Asp Lys Tyr Lys Gly
35 40
Lys Lys Val Asp Leu Tyr Gly Ala Tyr Tyr
45 50
Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn
55 60
Lys Thr Ala Cys Met Tyr Gly Gly Val Thr
65 70
Leu His Asp Asn Asn Arg Leu Thr Glu Glu
75 80
Lys Lys

<210> 33

<211> 82

<212> PRT

<213> staphylococcal enterotoxin D

<223> partial sequence as shown in Figure 3

<400> 33

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Thr Gly Asp Gln Phe Leu Glu Asn Thr Leu
 5                                  10
Leu Tyr Lys Lys Phe Phe Thr Asp Leu Ile
                15                  20
Asn Phe Glu Asp Leu Leu Ile Asn Phe Asn
                25                  30
Ser Lys Glu Met Ala Gln His Phe Lys Ser
                35                  40
Lys Asn Val Asp Val Tyr Pro Ile Arg Tyr
                45                  50
Ser Ile Asn Cys Tyr Gly Gly Glu Ile Asp
                55                  60
Arg Thr Ala Cys Thr Tyr Gly Gly Val Thr
                65                  70
Pro His Glu Gly Asn Lys Leu Lys Glu Arg
                75                  80
Lys Lys
```

<210> 34

<211> 82

<212> PRT

<213> staphylococcal enterotoxin E

<223> partial sequence as shown in Figure 3

<400> 34

```
Ser Asp Asp Gln Phe Leu Glu Asn Thr Leu
 5                                  10
Leu Phe Lys Gly Phe Phe Thr Gly His Pro
                15                  20
Trp Tyr Asn Asp Leu Leu Val Asp Leu Gly
                25                  30
Ser Lys Asp Ala Thr Asn Lys Tyr Lys Gly
                35                  40
Lys Lys Val Asp Leu Tyr Gly Ala Tyr Tyr
                45                  50
Gly Tyr Gln Cys Ala Gly Gly Thr Pro Asn
                55                  60
Lys Thr Ala Cys Met Tyr Gly Gly Val Thr
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65 70
Leu His Asp Asn Asn Arg Leu Thr Glu Glu
75 80
Lys Lys

<210> 35

<211> 89

<212> PRT

<213> staphylococcal enterotoxin B

<223> partial sequence as shown in Figure 3

<400> 35

Ser Ile Asp Gln Phe Leu Tyr Phe Asp Leu
5 10
Ile Tyr Ser Ile Lys Asp Thr Lys Leu Gly
15 20
Asn Tyr Asp Asn Val Arg Val Glu Phe Lys
25 30
Asn Lys Asp Leu Ala Asp Lys Tyr Lys Asp
35 40
Lys Tyr Val Asp Val Phe Gly Ala Asn Tyr
45 50
Tyr Gln Cys Tyr Phe Ser Lys Lys Thr Asn
55 60
Asp Ile Asn Ser His Gln Thr Asp Lys Arg
65 70
Lys Thr Cys Met Tyr Gly Gly Val Thr Glu
75 80
His Asn Gly Asn Gln Leu Asp Lys Tyr
85

<210> 36

<211> 89

<212> PRT

<213> staphylococcal enterotoxin C1

<223> partial sequence as shown in Figure 3

<400> 36

Ser Val Asp Lys Phe Leu Ala His Asp Leu
5 10
Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys
15 20
Asn Tyr Asp Lys Val Lys Thr Glu Leu Leu
25 30

Asn Glu Gly Leu Ala Lys Lys Tyr Lys Asp
35 40
Glu Val Val Asp Val Tyr Gly Ser Asn Tyr
45 50
Tyr Val Asn Cys Tyr Phe Ser Ser Lys Asp
55 60
Asn Val Gly Lys Val Thr Gly Gly Lys Thr
65 70
Cys Met Tyr Gly Gly Ile Thr Lys His Glu
75 80
Gly Asn His Phe Asp Asn Gly Asn Leu
85

<210> 37

<211> 89

<212> PRT

<213> staphylococcal enterotoxin C2

<223> partial sequence as shown in Figure 3

<400> 37

Ser Val Asp Lys Phe Leu Ala His Asp Leu
5 10
Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys
15 20
Asn Tyr Asp Lys Val Lys Thr Glu Leu Leu
25 30
Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp
35 40
Glu Val Val Asp Val Tyr Gly Ser Asn Tyr
45 50
Tyr Val Asn Cys Tyr Phe Ser Ser Lys Asp
55 60
Asn Val Gly Lys Val Thr Gly Gly Lys Thr
65 70
Cys Met Tyr Gly Gly Ile Thr Lys His Glu
75 80
Gly Asn His Phe Asp Asn Gly Asn Leu
85

<210> 38

<211> 89

<212> PRT

<213> staphylococcal enterotoxin C3

<223> partial sequence as shown in Figure 3

<400> 38

Ser Val Asp Lys Phe Leu Ala His Asp Leu
5 10
Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys
15 20
Asn Tyr Asp Lys Val Lys Thr Glu Leu Leu
25 30
Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp
35 40
Glu Val Val Asp Val Tyr Gly Ser Asn Tyr
45 50
Tyr Val Asn Cys Tyr Phe Ser Ser Lys Asp
55 60
Asn Val Gly Lys Val Thr Gly Gly Lys Thr
65 70
Cys Met Tyr Gly Gly Ile Thr Lys His Glu
75 80
Gly Asn His Phe Asp Asn Gly Asn Leu
85

<210> 39

<211> 79

<212> PRT

<213> streptococcal pyrogenic enterotoxin a

<223> partial sequence as shown in Figure 3

<400> 39

Ser Val Asp Gln Leu Leu Ser His Asp Leu
5 10
Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp
15 20
Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu
25 30
Met Ala Thr Leu Phe Lys Asp Lys Asn Val
35 40
Asp Ile Tyr Gly Val Glu Tyr Tyr His Leu
45 50
Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser
55 60
Ala Cys Ile Tyr Gly Gly Val Thr Asn His
65 70
Glu Gly Asn His Leu Glu Ile Pro Lys
75

<210> 40

<211> 73

<212> PRT

<213> toxin shock syndrome toxin-1

<223> partial sequence as shown in Figure 3

<400> 40

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Val Leu Asp Asn Ser Leu Gly Ser Met Arg
                 5                  10
Ile Lys Asn Thr Asp Gly Ser Ile Ser Leu
            15                  20
Ile Ile Phe Pro Ser Pro Tyr Tyr Ser Pro
            25                  30
Ala Phe Thr Lys Gly Glu Lys Val Asp Leu
            35                  40
Asn Thr Lys Arg Thr Lys Lys Ser Gln His
            45                  50
Thr Ser Glu Gly Thr Tyr Ile His Phe Gln
            55                  60
Ile Ser Gly Val Thr Asn Thr Glu Lys Leu
            65                  70
Pro Thr Pro
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